

Rethinking our collective decision making

Let's use visual tools to avoid more disasters

Target audience: everyone interested,
no special knowledge necessary

Reading time: 15-25 minutes

Page layout: allows easy reading
without scrolling,
even on
very small screens

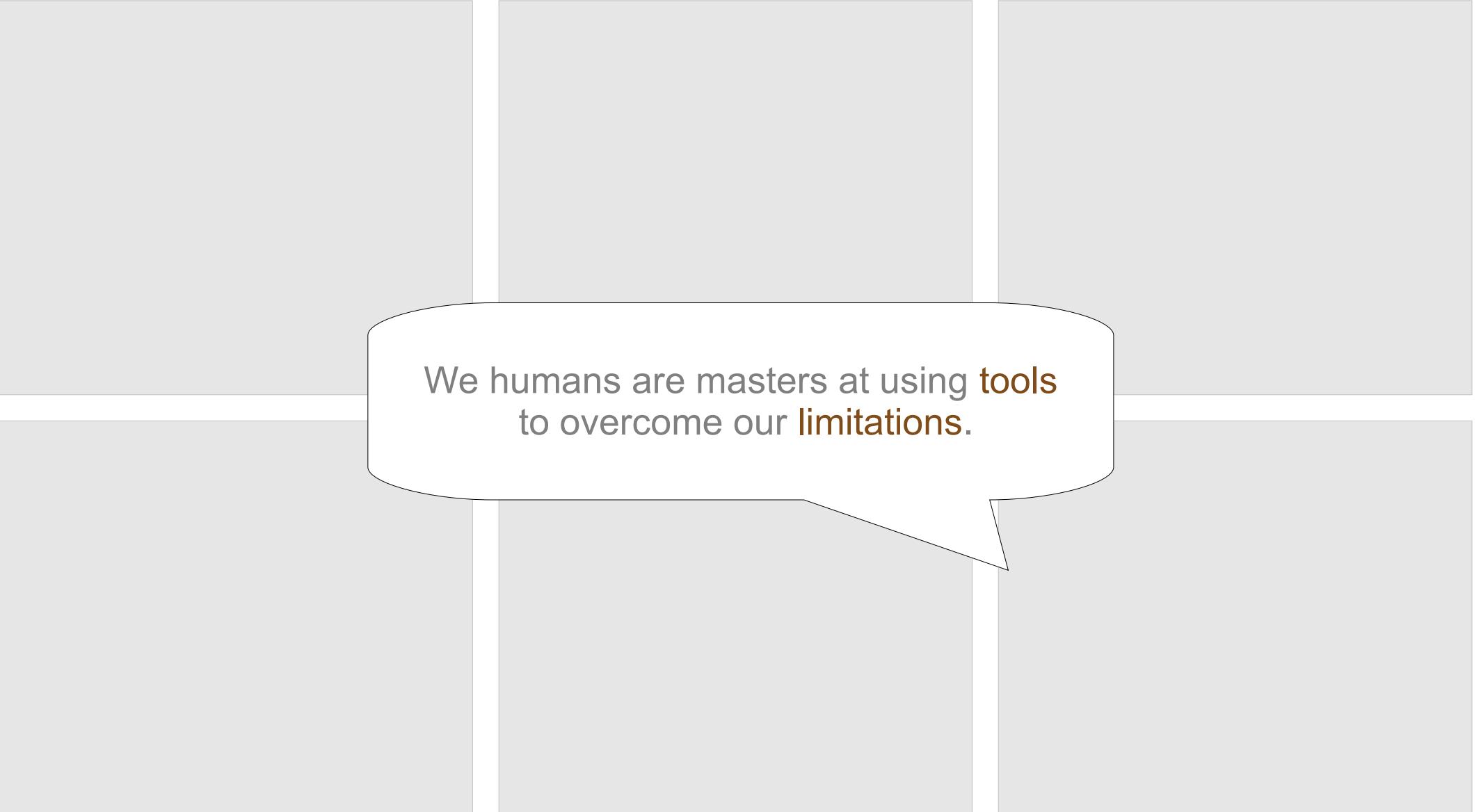
Author: Edgar Hartel

Date: published January 2019

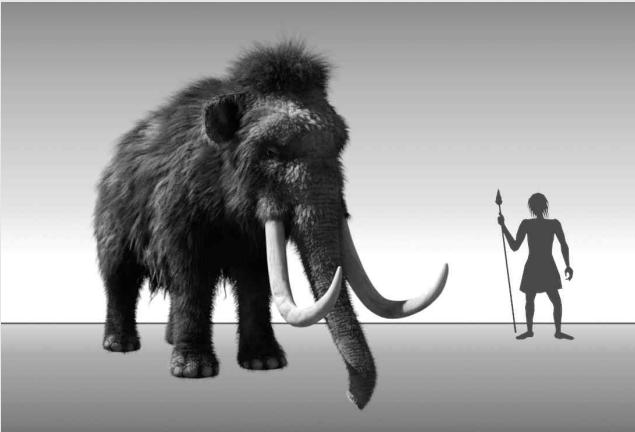
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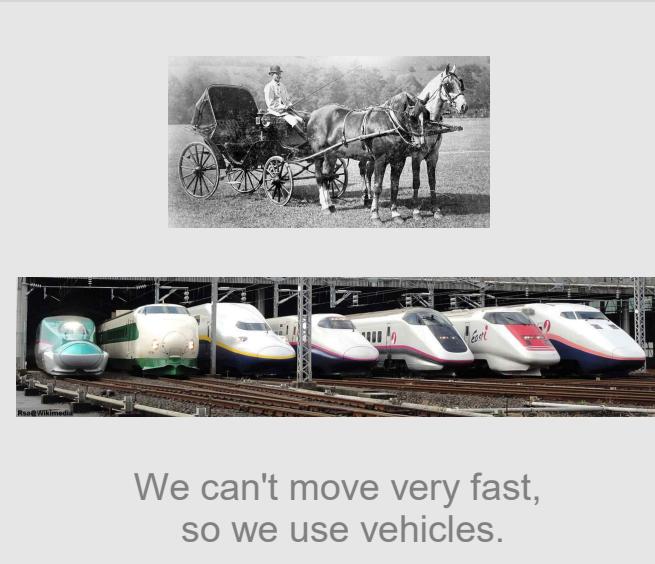
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We humans are masters at using tools
to overcome our limitations.



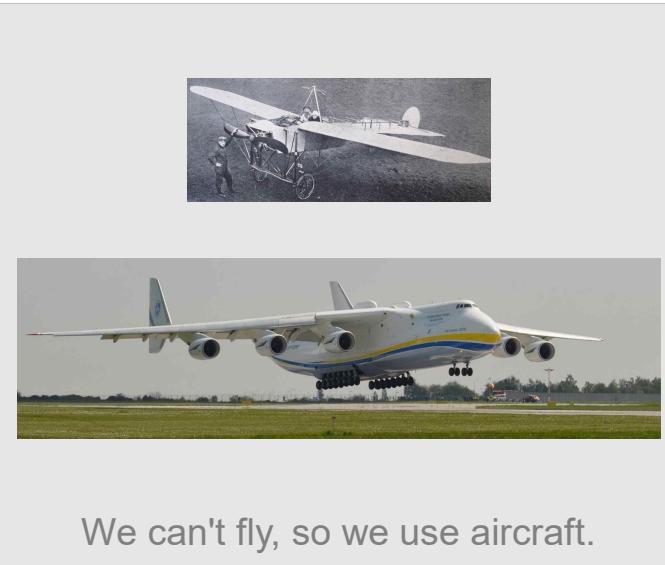
We couldn't fight mammoths with bare hands, so we used weapons.



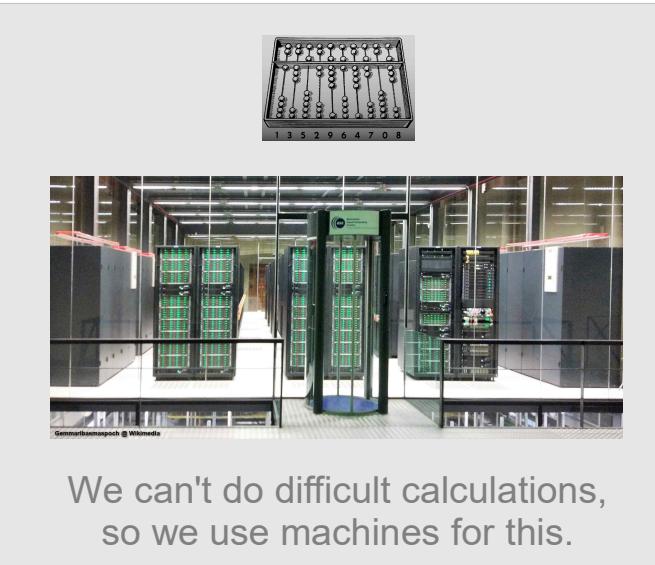
We can't move very fast, so we use vehicles.



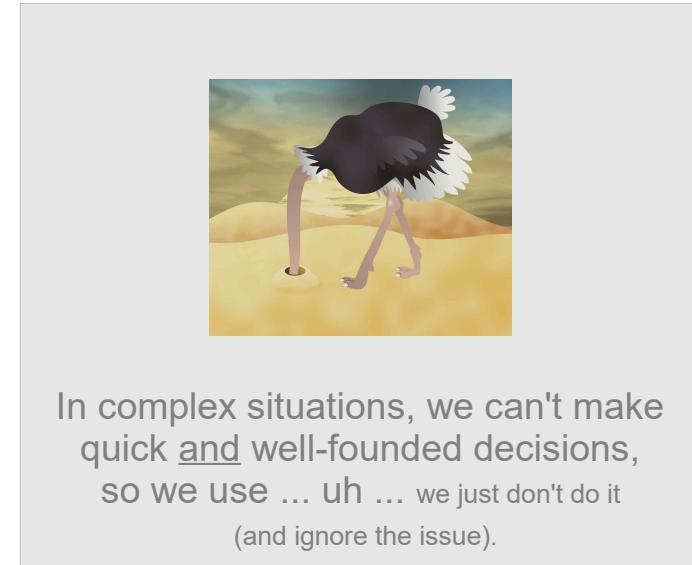
We're not very strong, so we use machines that are.



We can't fly, so we use aircraft.



We can't do difficult calculations, so we use machines for this.



In complex situations, we can't make quick and well-founded decisions, so we use ... uh ... we just don't do it (and ignore the issue).

I don't think it's smart to
“ignore the issue”.

That's what this document
is about.

Note:

When I say “well-founded decisions”,
I refer to decisions that are made
after all relevant options and criteria
have been evaluated.

Progress

Intro **done**

Why our current situation is dangerous **up next**
How to improve our current situation
Outlook

Summary

Other thoughts

References

Where it is obvious that life or money is at stake, the need for quick and well-founded decisions becomes obvious, too.

In **some** of these cases we have started to use tools to overcome our mental limitations. And it works.



Flight computers assist aircraft pilots.



Car safety systems assist drivers.



Algorithms assist stock traders.



Medical knowledge systems assist doctors.



Algorithms
assist stock traders.



Medical knowledge systems
assist doctors.



Flight computers
assist aircraft pilots.



Car safety systems
assist drivers.

But mostly,
and especially in politics,
using special tools for (quick and
well-founded) decision making
appears to be an ignored concept.

This is a dangerous situation.
For you, too.

Political decisions affect all of us.

There have been

- wars
- famines
- environmental disasters
- economic crises
- (...)

because of poor political
decision making.

Many people have suffered
or even died. Others do so while
you read this. Just ask yourself,
your parents or your grandparents.

And this happens again and
again and again.

Because if we use the same
methods as always, the results
will be as always.

What methods
are we talking about?

In the case of tyranny,
there is a single person, or a
small group, that makes political
decisions. This certainly allows
for quick decisions, but not for
well-founded ones.

That's because the leaders' views
are usually dominated by ideology
and ego. The leaders also tend
to lose contact with reality.

Methods used in tyranny:
personal reasoning, gut feeling,
advisor/expert consultations

In the case of democracy, there are dozens of persons in government, and hundreds or thousands in parliament(s), that make political decisions **directly** and on a daily basis.

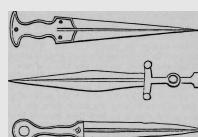
The part of the population that has the right to vote makes political decisions **indirectly** and seldom.

Democracy allows, in theory, for well-founded and also quick decision making (within government and parliament), but this is currently far from reality.

Methods used in democracy: personal reasoning, gut feeling, advisor/expert consultations, discussion/debate, other hearings, and voting

Our decision making methods have
hardly changed for over 2 000 years ...

... while the world has.
A lot, actually.



The traditional methods would work better today if they were “updated”

(that is, somehow freed from their current flaws, of which many relate to media exposure and/or power preservation).

But that won't be enough.

Because a core concept in democracy would still be **speech**.

Someone is talking, while others are listening (or not).

No matter whether it happens face to face, through paper documents, or through electronic channels:

this is an extremely **slow** and **error-prone** way to exchange and process information.

Moreover, it favors
(and often brings to power) people
who speak well and/or loudly.

Not people who think thoroughly.

This is dangerous, too.

We can do better.

And we have to,
if we want to avoid new failures
and disasters.

We have to improve our
collective decision making.

Progress

Intro done

Why our current situation is dangerous done
How to improve our current situation up next
Outlook

Summary

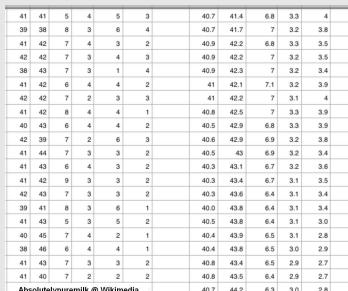
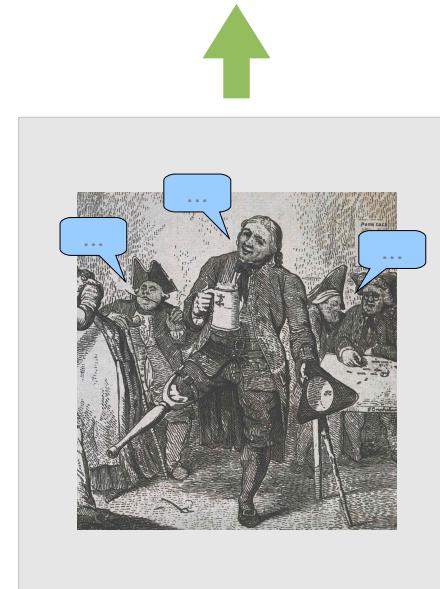
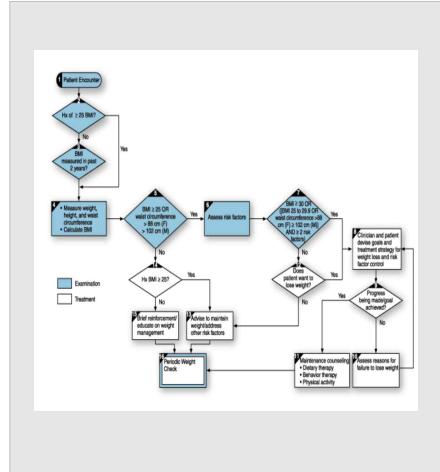
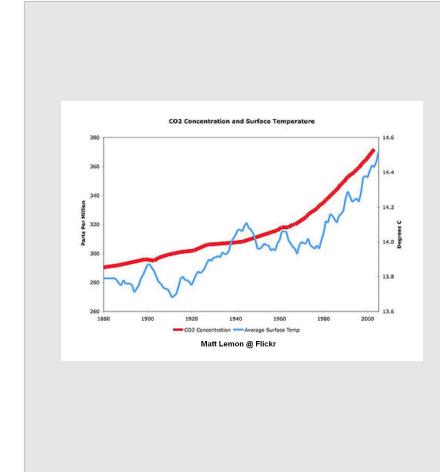
Other thoughts

References

I'm not talking about futuristic brain implants.

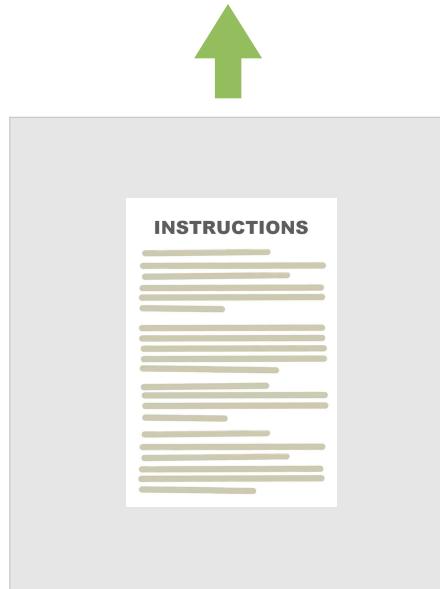
I'm talking about a well-proven technique called **visualization**.

Diagrams, used as tools, can **overcome the limitations of word-based communication, reasoning and understanding.**



| | | | | | | | | | | | |
|----|----|---|---|---|------|------|------|-----|-----|-----|-----|
| 41 | 41 | 5 | 4 | 5 | 3 | 40.7 | 41.4 | 6.8 | 3.3 | 4 | 2.7 |
| 41 | 42 | 7 | 4 | 3 | 2 | 40.9 | 42.2 | 6.8 | 3.3 | 3.5 | 2.4 |
| 42 | 42 | 7 | 3 | 4 | 3 | 40.9 | 42.2 | 7 | 3.2 | 3.5 | 2.4 |
| 38 | 43 | 7 | 3 | 1 | 4 | 40.9 | 42.3 | 7 | 3.2 | 3.4 | 2.3 |
| 41 | 42 | 6 | 4 | 4 | 2 | 41 | 42.1 | 7.1 | 3.2 | 3.9 | 2 |
| 42 | 42 | 7 | 2 | 3 | 3 | 41 | 42.2 | 7 | 3.1 | 4 | 2 |
| 41 | 42 | 8 | 4 | 4 | 1 | 40.8 | 42.5 | 7 | 3.3 | 3.9 | 1.8 |
| 40 | 43 | 6 | 4 | 4 | 2 | 40.5 | 42.9 | 6.8 | 3.3 | 3.9 | 1.8 |
| 42 | 39 | 7 | 2 | 6 | 3 | 40.6 | 42.9 | 6.9 | 3.2 | 3.8 | 1.8 |
| 41 | 44 | 7 | 3 | 3 | 2 | 40.5 | 43 | 6.9 | 3.2 | 3.4 | 1.7 |
| 41 | 43 | 6 | 4 | 3 | 2 | 40.3 | 43.1 | 6.7 | 3.2 | 3.6 | 1.7 |
| 41 | 42 | 9 | 3 | 3 | 2 | 40.3 | 43.4 | 6.7 | 3.1 | 3.5 | 1.6 |
| 42 | 43 | 7 | 3 | 2 | 40.3 | 43.6 | 6.4 | 3.1 | 3.4 | 1.5 | |
| 39 | 41 | 8 | 3 | 6 | 1 | 40.0 | 43.8 | 6.4 | 3.1 | 3.4 | 1.6 |
| 41 | 43 | 5 | 3 | 5 | 2 | 40.5 | 43.8 | 6.4 | 3.1 | 3.0 | 1.7 |
| 40 | 45 | 7 | 4 | 2 | 1 | 40.4 | 43.9 | 6.5 | 3.1 | 2.8 | 1.6 |
| 38 | 46 | 6 | 4 | 4 | 1 | 40.4 | 43.8 | 6.5 | 3.0 | 2.9 | 1.7 |
| 41 | 43 | 7 | 3 | 3 | 2 | 40.8 | 43.4 | 6.5 | 2.9 | 2.7 | 1.8 |
| 41 | 40 | 7 | 2 | 2 | 2 | 40.8 | 43.5 | 6.4 | 2.9 | 2.7 | 1.8 |
| | | | | | | 40.7 | 44.2 | 6.3 | 3.0 | 2.8 | 1.7 |

Absolutlyhypuronic @ Wikipedia

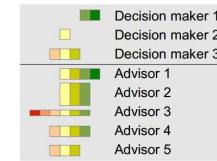


The most versatile and efficient diagrams that support collective decision making are multi-party decision matrices (M-P DMs).

For more information, see reference #1 on p. 47.

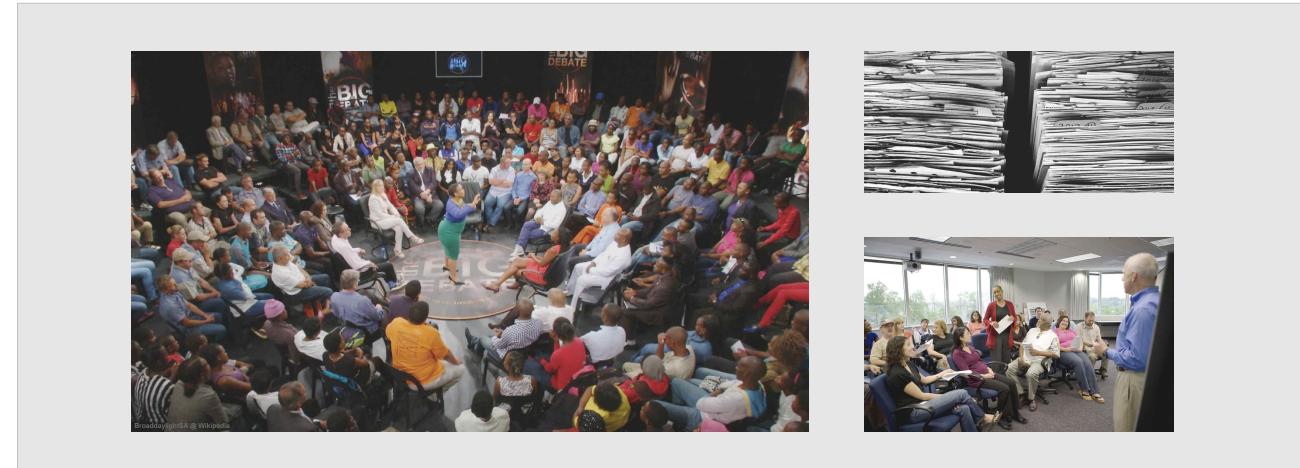
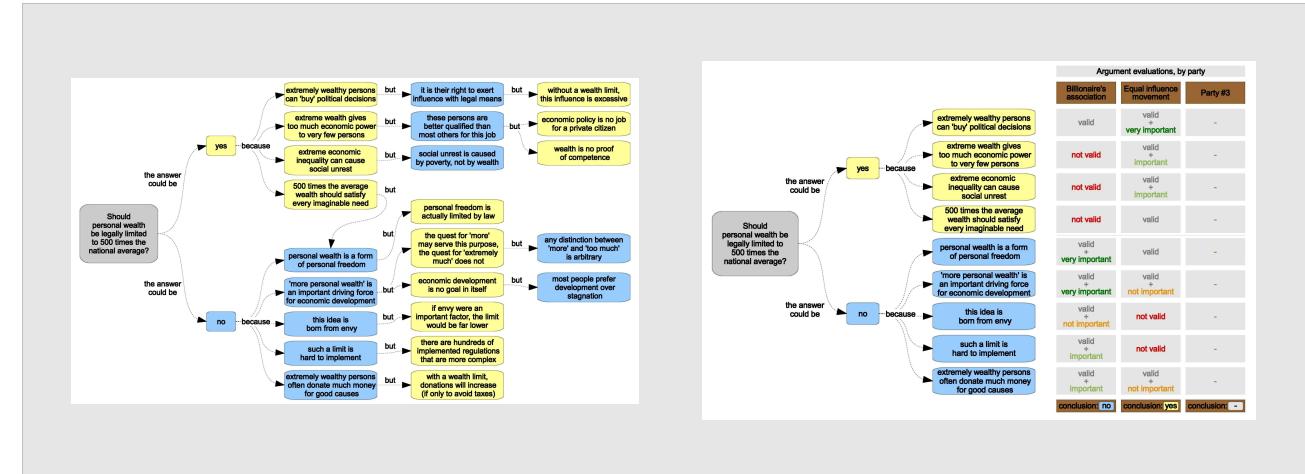
| | | | | | | | |
|-------------------------|-----------------------|------------------|-----------------------------|----------------|-----------------------------|------------------|-----------------------|
| not acceptable (n/a) | very negative (-3) | negative (-2) | moderately negative (-1) | neutral (0) | moderately positive (+1) | positive (+2) | very positive (+3) |
|-------------------------|-----------------------|------------------|-----------------------------|----------------|-----------------------------|------------------|-----------------------|

| | Option 1 | Option 2 | Option 3 | Option 4 |
|-------------|----------|----------|----------|----------|
| Criterion 1 | + | - | + | - |
| Criterion 2 | + | - | + | - |
| Criterion 3 | + | - | + | - |
| Criterion 4 | + | - | + | - |
| Criterion 5 | + | - | + | - |
| Criterion 6 | + | - | + | - |
| Criterion 7 | + | - | + | - |



Limited to
“option A or B?”-type
decisions, but easy to make
and read, are **argument maps**
and **argument evaluation**
diagrams.

For more information, see
reference #2 on p. 48.



Other useful tools that can help you to prepare for a decision (but not to actually make it) are:

- goal maps
- common ground surveys
- scenario trees

For more information, see reference #3 on p. 49.

But the highest priority should definitely be given to multi-party decision matrices (M-P DMs).

There are 5 essential points
we need to work on:

1.

The first, and perhaps largest,
obstacle to overcome is a
lack of awareness.

Too many people don't recognize
slow and/or poorly founded
decision making as a threat or as
a problem that can be solved.

I hope that publishing texts
like this one (and
posting videos) can help.

You could help, too.

For more information, see
reference #4 on p. 51.

2.

We need free and very user-friendly **software** to create and work with these diagrams.

We're not there yet
(as per January 2019).

For more information, see
reference #5 on p. 52.

The image displays five screenshots of a software application titled "Multi-Party Decision Matrix Tool".

- Screenshot 1:** The main title screen with a color bar at the top and two buttons: "Quit" and "Proceed". Below the title, it says: "This is a prototype version. It has bugs. Many features are not implemented yet. Use at own risk."
- Screenshot 2:** A selection screen titled "Select your role" with three columns: "Decision maker" (with items 1 Select Director Alice, 2 Select Director Bob, 3 Select Director Carol), "Advisor" (with items 4 Select Engineer Dave, 5 Select Accountant Emily, 6 Select PR strategist Frank, 7 Select Ethics committee, 8 Select Employee Rep Harry, 9 Select Supplier Rep Ingrid), and "Diagram administrator" (with item 10 Select Admin Admin I. Stratos). Navigation buttons "Go back to previous page" and "Go to main menu" are at the bottom, along with "Quit" and "Get help".
- Screenshot 3:** A detailed view of the decision matrix interface. It shows a grid of items with various status indicators (e.g., "not necessary", "Rate this", "Edit this") and a toolbar with buttons like "View checklist", "Shift priorities", "Zoom in", "Zoom out", "Scroll up", "Scroll left", "Scroll right", "Scroll down", "Go back to previous page", "Go to main menu", "Change view mode", "Rotate view", "View on full screen", "Save diagram", "Create PDF file", "Quit", and "Get help".
- Screenshot 4:** A screen for entering a headline for a new criterion. It has fields for "Confirm headline" and "New criterion headline ...". It also includes optional short and long descriptions. Navigation buttons "Go back to previous page", "Quit", and "Get help" are at the bottom.
- Screenshot 5:** A rating scale screen for option/criterion combinations. It shows a grid of items with ratings from -3 to +3. The legend indicates: "not acceptable" (-3), "very negative" (-2), "negative" (-1), "moderately negative" (0), "neutral" (+1), "moderately positive" (+2), and "positive" (+3). Navigation buttons "Go back to diagram page", "Quit", and "Get help" are at the bottom.

Below the screenshots, the text reads: "Software mock-up / screen layout samples (own work)"

3.

We must **educate/train** “everyone” (especially politicians and students) in using decision making methods and tools.

Choosing and using the proper tools must become the **standard approach** to collective decision making. It must become the “normal thing” everyone knows from school, instead of being regarded as a “weird idea”.



For more information, see reference #6 on p. 53.

4.

We must establish, and then enforce, **quality standards** for decisions that affect the public.

Most politicians of today will not like this and oppose any such changes, openly or behind the scenes. They need to be convinced or replaced.

For more information, see reference #7 on p. 54.

5.

We need independent decision process specialists.

As **neutral** parties and tool experts, they can **guide** (especially larger) groups of decision makers to results that meet a quality standard, within minimum time.

To be perfectly clear: these specialists are not decision makers, and they shall not favor any particular decision option.

For more information, see reference #7 on p. 54.

A very brief recap:

We need ...

1. ... more **awareness**
2. ... suitable **software**
3. ... decision making **education**
4. ... functional **quality standards**
5. ... independent **specialists**

Progress

Intro done

Why our current situation is dangerous done
How to improve our current situation done
Outlook up next

Summary

Other thoughts

References

Let's **imagine** we have,
some time in the future, achieved
the goals just mentioned.

What now?

First of all, we could lean back
and enjoy the fact that we've
come so far.

The most important part is done.

Finally, decisions affecting
the public are consistently
well-founded, transparent,
and they are made quickly.

Problems are generally solved
long before they become
unmanageable or threats.

Democracy has not only survived,
it works now better than ever.

Coming back from this dream ...

What other developments
can we expect?

Here are some ideas.

1.

Obviously, the software tools used for diagram making could become **even easier to use**, and they could become available on even more devices.

This would further lower the “getting started” threshold in small scale scenarios, especially for private users.

2.

Virtual reality technology could be used to add extra dimensions to the trusty multi-party decision matrices and other diagrams.

Instead of looking at a diagram, you could walk or fly around in a virtual 3-dimensional space with animated interactive elements, tactile feedback, sounds and perhaps smells.

If done well, this would probably help to understand some scenarios.

If done poorly, this would be rather distracting, and hence a step backwards.

For transparency's sake, this should not be used for public decision making unless everyone affected has easy access to the necessary devices.

3.

We might partner up with **artificial intelligence** entities that don't have the same mental limitations as us humans.

They will, however, have their own limitations.

The first humans to try this cooperation should be experienced decision process specialists.

It will be interesting to see who will become the junior and who the senior partner.

In that respect, I find Isaac Asimov's story "The Evitable Conflict" from 1950 quite remarkable.

4.

In personal decision making, the “**digital assistants**” promoted by the large IT companies will probably evolve into something more versatile and useful than today (January 2019).

However, while more capable “assistants” would increase user confidence and comfort, they would certainly not encourage critical thinking on the user side.

After all, no matter how smart and friendly they appear to a user, “digital assistants” are remote controlled by companies with business -- and political -- interests.

They could potentially manipulate a very large number of people, even in real-time.

For democracies, any means of mass manipulation is a serious risk that need to be counteracted.

5.

I hope that every larger unit in public administration (such as towns, cities, counties, states -- and countries) will use a virtual “status dashboard”.

In its simplest form, this can be a goal map on a web page.

It should allow officials, politicians and citizens to zoom in from the major goals to the detailed ones, display their current achievement **status** and their **trend**, and be updated at least daily.

Already such a simple information display would help to literally see what is going well, and what needs more attention.

6.

The accountability of politicians
(and perhaps other decision
makers) could be defined and
practiced differently.

This is certainly true today,
and should be even more so
under different circumstances
in the future.

However,
if the decision making quality
standards were implemented
well, this issue is taken care of.
But maybe not completely.

Note that any of these possible
developments could occur
combined with others
(for instance: interaction with
artificial intelligence entities in
virtual reality).

Progress

| | |
|--|---------|
| Intro | done |
| Why our current situation is dangerous | done |
| How to improve our current situation | done |
| Outlook | done |
| Summary | up next |
| Other thoughts | |
| References | |

Summary (page 1 of 3)

Usually, when humans run into one of their limitations, they create and use tools to overcome it. Mostly with great success.

One of these limitations is our inability to consistently make quick and well-founded collective decisions.

But because this is a limitation of our own minds, it's hard (and unpleasant) to recognize.

Therefore, we haven't done much to overcome it.

Summary (page 2 of 3)

While the world is more complex and faster changing than ever before, our public/collective decision making follows customs that are centuries old, virtually tool-free, and slow.

Not being able to consistently make quick
and well-founded decisions is dangerous
(and often costly),

because some of the unprevented/unsolved/caused problems are dangerous (and/or costly).

In other words: this can leave you unhappy, poor, sick or dead.

Summary (page 3 of 3)

So what we need to do is this:

- raise everyone's **awareness** (of what you just read)
- make suitable decision making **tools**
widely available
- make decision making **education** widely available,
and a part of school education
- make sure that public/collective decision making
is done by well-trained people with the right tools
(= establish **quality standards**)

Progress

| | |
|--|---------|
| Intro | done |
| Why our current situation is dangerous | done |
| How to improve our current situation | done |
| Outlook | done |
| Summary | done |
| Other thoughts | up next |
| References | |

1.

What about
personal decision making?

Can (or should) you use
any tools?

Any of the tools mentioned earlier
can be put to good use in
personal decision making.

There is a threshold, though.
How high it is depends on how
easy it is for you to use a specific
tool. That again depends on the
available software and your
experience level.

I would **never** use a tool for everyday “tea or coffee?”-type decisions.

I would **always** use a tool for a “change job?” or “move to another place?”-type decision.

That's because such decisions have **major consequences** and involve confusingly **many factors**.

The most suitable tool is often a **decision matrix**. The multi-party version requires special software, but a single-party version can be made even with pen and paper (explained in the “How to ...” e-book mentioned on p. 47).

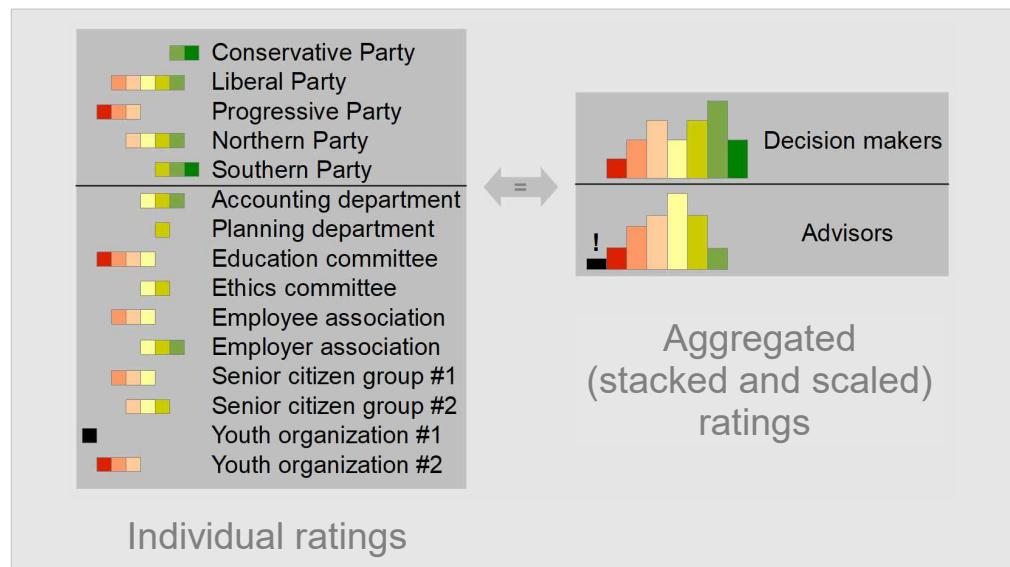
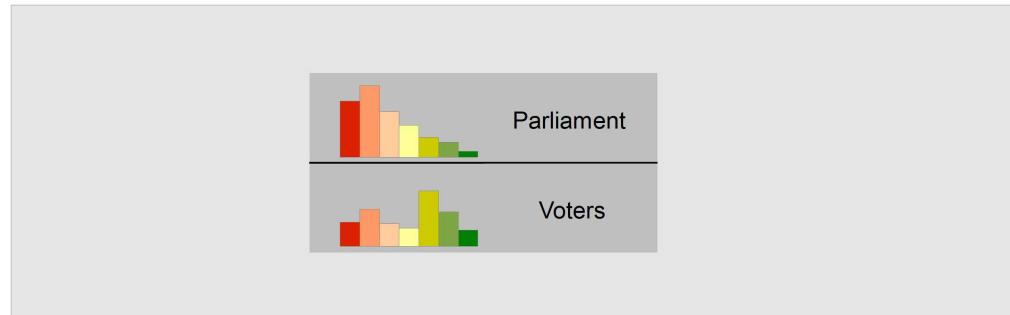
If your scenario has only two options, an **argument map** is a good alternative.

If you're not sure what you want, why you want it, or how to achieve it: making a **goal map** helps.

2.

Multi-party decision matrices could also be used in a direct democracy.

If the ratings are shown aggregated instead of individually, the number of participating parties is unlimited.



3.

Quite a number of highly developed civilizations have disappeared through history.

In many cases, they did not survive because they were not able to respond well enough to changing conditions.



Have I mentioned the importance of quick and well-founded collective decision making?

4.

Political systems have primarily evolved to distribute **power** in a society, not to ensure quick and well-founded decision making.

Who makes decisions has generally been considered more important than **how well** and **how fast**.

I see this as a serious system flaw.

Especially when looking at the previous page.

5.

On page 12 I wrote:

“(Speech) ... is an extremely **slow** and **error-prone** way to exchange ... information.”

A comment:

Information exchange is only one of two purposes of speech.

The other, often more important one, is to establish **social relations** and **relative ranking** (who is smarter? richer? more powerful? more attractive? morally superior?) between talker and listener.

Especially if there is an audience.

This explains a lot, I think.

6.

You are still reading this ... wow.

Then I will share a closing thought with you that I find a little amusing, although it's also sad.

It's this one:

The fastest way to establish quality standards for public decision making could be to convince a nation's leaders that their country will thus gain an advantage over other countries.

Or that their favorite opponent is doing it, and they themselves are "left behind".

This has worked many times before. Strange, isn't it?

Progress

| | |
|--|---------|
| Intro | done |
| Why our current situation is dangerous | done |
| How to improve our current situation | done |
| Outlook | done |
| Summary | done |
| Other thoughts | done |
| References | up next |

Images

Many images in this document don't show an attribution, because they are "Public Domain" and/or "CC0" images.

All images in this document were published with licenses that allow sharing and remixing.

I hope the image creators and photographed persons agree with the way I used (and often **modified**) their images in a context they could not have foreseen.

Thanks to all of them.

Reference #1

(referred to from p. 16 and 39)

For more information about “multi-party decision matrices”, have a look at this ...

... video: “What is a multi-party decision matrix? --- How can it support good decision making?” (5 minute summary)

(primary site in 2018: youtube.com)

... PDF e-book (with Creative Commons license): “How to visualize and evaluate decision options”

(primary sites in 2018: archive.org, gutenberg.org, openlibrary.org --- reading time: 25-30 minutes)

Addendum: in scenarios that involve more than perhaps 15 parties, it might be better to aggregate their ratings, as shown on p. 40.

Reference #2

(referred to from p. 17)

For more information about “argument maps” and “argument evaluation”, have a look at this ...

... video: “How to make and use argument maps : Avoid endless discussions”

(primary site in 2018: youtube.com)

... PDF e-book (with Creative Commons license):
“How to make and use argument maps”

(primary sites in 2018: archive.org, gutenberg.org, openlibrary.org
--- reading time: 20-25 minutes)

Addendum: You can find both free and commercial argument mapping software on the web. If you want full control over your diagram, the general-purpose “Draw” program of the OpenOffice/LibreOffice suites (Open Source) is a good alternative. It won't guide you to a result, though. This document is made with “Draw”.

Reference #3

(referred to from p. 18)

For more information about “goal maps”,
have a look at this ...

... PDF e-book (with Creative Commons license):
“A quick introduction to goal maps”

(primary sites in 2018: archive.org, gutenberg.org,
openlibrary.org --- reading time: 10-20 minutes)

I plan to publish short PDF e-books about
“common ground surveys” and “scenario trees”
in 2019/2020 (no guarantees).

(...)

(...)

The purpose of a “common ground survey” is to identify and visualize accepted facts, shared views and disagreements.

It's very briefly mentioned (as a step in a decision process) on p. 341 of the ...

... PDF e-book (with Creative Commons license):
“Decision making, politics and quality of life”

(primary sites in 2018: archive.org, gutenberg.org, openlibrary.org --- reading time: 1-3 hours)

Appendix C of the same e-book explains some concepts that are very similar to the ones behind “scenario trees”. It is titled “Do not create larger problems while solving the original one”.

A web search for “scenario trees” will help you find descriptions, but most of these were written for experts.

Reference #4

(referred to from p. 19)

The easiest way to help is to share this document with others, or to put a print of your favorite page(s) somewhere where others will notice it.

Want to do more? Here's a lead:

“An appeal: how you can contribute” is the title of chapter 9 (5-10 minutes reading time) in the already mentioned ...

... PDF e-book (with Creative Commons license):

“Decision making, politics and quality of life”

(primary sites in 2018: archive.org, gutenberg.org, openlibrary.org --- reading time: 1-3 hours)

By the way, I'm not asking for money.

Reference #5

(referred to from p. 20)

Regarding the M-P DM software:

I've approached a number of government offices, politicians and companies with this idea, but have so far (January 2019) always run into the "lack of awareness" problem.

I have detailed plans (program flow, user interface, data structure, development stages) for the software ready. But I need a partner for coding, testing and publishing.

If you're interested, write to my current e-mail addresses:
e.hartels.account@outlook.com
contact.e.hartel@gmail.com
and/or leave a comment on the video mentioned on p. 47.

Reference #6

(referred to from p. 21)

- As you probably have guessed from the manipulated photos on p. 21, I believe that my own publications (listed on p. 55) could serve well for education purposes.
- Scooters, cars and heavy trucks require different levels of driving education. That's mostly because you are a larger risk to others in a truck than on a scooter. If your driving knowledge or skills are poor, you can't get a license.
Accordingly, I think anyone who makes decisions on behalf of others should have a certain level of decision making knowledge and skills. Passing tests and obtaining a license would be proof of that.
- At least the higher levels of decision making education should include simulator training. Some software (mostly games) has been available for years, but, as far as I know, these programs don't include the use of decision making tools. Furthermore, most of them require you to follow an "expand and conquer" strategy. We need something better.

Reference #7

(referred to from p. 22 and 23)

For more information about “quality standards for decisions that affect the public” and “decision process specialist”, have a look at this ...

... PDF e-book (with Creative Commons license):
“Quality standards for decision making”

(primary sites in 2018: archive.org, gutenberg.org,
openlibrary.org --- reading time: 20-30 minutes)

In the above e-book, I use the term “decision process pilot” for the mentioned specialist.

This is the last page
of this short book.

If you've read it: Thank you.

Previous PDF e-book publications by Edgar Hartel:

“Decision making, politics and quality of life”
“Quality of life as a decision criterion”
“Which factors hinder good decision making”
“A quick introduction to goal maps”

“How to make and use argument maps”
“How to visualize and evaluate decision options”
“Quality standards for decision making”

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